Project Design Phase-II
Solution Requirements (Functional & Non-functional)

Date	17-10-2022
Team ID	PNT2022TMID40719
Project Name	SMART WASTE MANAGEMENT SYSTEM FOR METROPOLITAN CITIES
Maximum Marks	4 Marks

Functional Requirements:

Following are the functional requirements of the proposed solution.

FR No.	Functional Requirement (Epic)	Sub Requirement (Story / Sub-Task)
FR-1	Detailed bin inventory.	The bins and stands which are monitored can be seen on the map, and we can also visit them at any time via the Street View feature from Google map .Bins or stands are visible on the map as green, orange circles. We can also see the bin details in the Dashboard – last weight measurement, GPS location and collection schedule.
FR-2	Real time bin monitoring.	The Dashboard displays which displays all the real-time data on filling levels of bins monitored by smart sensors. Along to the percentage of fill level, based on the previous data, the tool predicts when the bin will become full, one of the functionalities that are not included even in the best waste management software.. Sensors recognize picks as well; so you can check when the bin was collected last . With the help of real-time data and predictions, you can eliminate the overflowing bins and stop collecting half-empty ones.
FR-3	Expensive bins.	One can help you identify bins that drove up your collection costs. The tool calculates a rating for each bin in terms of collection costs. *The tool considers the average distance depo bin discharge in the area. The tool assigns bin a rating and calculates the distance from depo bin discharge.

FR-4	Adjust bin distribution.	Ensure that the most optimal distribution of bins and Identify areas with either dense or sparse bin distribution. Make sure that all trash types are represented within a stand. Based on the previous data, you can adjust bin capacity or location where ever necessary.
FR-5	Eliminate Unefficient picks.	Removing the collection of half-empty bins. By using real-time data on fill-levels and pick recognition, we can show you how full the bins can be collected.
FR-6	Plan waste collection routes.	The tool which semi-automates the waste collection planning of route. Based on current bin fill levels and predictions of reaching full capacity, we need to be ready to respond and schedule waste collection. We can also compare planned vs. executed routes to identify any inconsistencies.

FR No.	Non-Functional Requirement	Description
NFR-1	**Usability**	IoT device verifies that usability is a special and important perspective to analyze user requirements, which can further improve the design quality. In the design process with user experience as the core, the analysis of users' product usability can indeed help designers better understand users' potential needs in waste management, behavior and experience.
NFR-2	**Security**	Use a reusable bottles Use reusable grocery bags Purchase wisely and recycle Avoid single use food and drink containers.
NFR-3	**Reliability**	Smart waste management is also about creating better working conditions for waste collectors and drivers. Instead of driving the same collection routes and servicing empty bins, waste collectors will spend their time more efficiently, taking care of bins that need servicing.
NFR-4	**Performance**	The Smart Sensors use ultrasound technology to measure the fill levels (along with other data) in bins several times a day. Using a variety of IoT networks ((NB-IoT,GPRS), the sensors send the data to Sensoneo's Smart Waste Management Software System, a powerful cloud-based platform, for data-driven daily operations, available also as a waste management app. Customers are hence provided data-driven decision making, and optimization of waste collection routes, frequencies, and vehicle loads resulting in route reduction by at least 30%.
NFR-5	**Availability**	By developing & deploying resilient hardware and beautiful software we empower cities, businesses, and countries to manage waste smarter.
NFR-6	**Scalability**	Using smart waste bins reduce the number of bins inside town , cities coz we able to monitor the

Non-functional Requirements:

Following are the non-functional requirements of the proposed solution.

		garbage 24/7 more cost effect and scalability when we moves to smarter.